



Myc binds the pluripotency factor Utf1 through the basic-helix-loop-helix leucine zipper domain.

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Public Summary:

In order to elucidate the function of Myc in the maintenance of pluripotency and self-renewal in mouse embryonic stem cells (mESCs), we screened for novel embryonic stem cell (ESC)-specific interactors of Myc by mass spectrometry. Undifferentiated embryonic cell transcription factor 1 (Utf1) was identified in the screen as a putative Myc binding protein in mESCs. We found that Myc and Utf1 directly interact. Utf1 is a chromatin-associated factor required for maintaining pluripotency and self-renewal in mESCs. It can also replace c-myc during induced pluripotent stem cell (iPSC) generation with relatively high efficiency, and shares target genes with Myc in mESCs highlighting a potentially redundant functional role between Myc and Utf1. A large region of Utf1 was found to be necessary for direct interaction with N-Myc, while the basic helix-loop-helix leucine zipper domain of N-Myc is necessary for direct interaction with Utf1.

Scientific Abstract:

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